

# Your Ultimate Source for OEM Repair Manuals

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## 2003 JEEP Grand Cherokee OEM Service and Repair Workshop Manual

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		Ignition position.
		Configuration data and DTC status from various ECUs.
CAN-FD-8	BCM	Battery voltage, critical state, load shedding.
		Configuration data and DTC status from various ECUs.
	RADIO	Power, display intensity, status
		Touch screen X and Y axis values
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	TBM2	Service call type and status
CAN-IHS	BCM	Power and operational mode status.
		Ignition position.
		Ignition run active for remote start.
		Daylight brightness
		System voltage and load shedding status
		VIN information
		Configuration data and DTC status from various ECUs.
	ICS	Radio knob(s) direction and value.
		Radio button(s) status.
	RADIO	Power, display intensity, status
LVDS	RADIO	Display

YOUR CURRENT VEHICLE

## Display Screen Module

### DISPLAY SCREEN MODULE

The Display Screen Module (DSM) is integral to the instrument panel center bezel ([Refer to Body/Instrument Panel/BEZEL, Instrument Panel, Center/Removal and Installation](#))([Refer To List 1](#)).

### Refer To List:

#### List 1

- [23 - Body / Instrument Panel / BEZEL, Instrument Panel, Applique / Removal and Installation](#)
- [23 - Body / Instrument Panel / BEZEL, Instrument Panel, Center / Removal and Installation](#)
- [23 - Body / Instrument Panel / BEZEL, Instrument Panel, Steering Wheel / Removal and Installation](#)

- Passenger Door Module (PDM)

Each DCM contains a Central Processor Unit (CPU) and communicates with the other DCM as well as other Electronic Control Units (ECUs) in the vehicle over the Controller Area Network-Interior High Speed (CAN-IHS) data bus system. The DCMs are connected to the vehicle electrical system through connector receptacles that are integral to the module housing.

Each DCM is concealed behind the front trim panel where it is secured through mounting tabs to the door hardware module carrier by fasteners. The DCMs are located in the front door hardware carriers, between the power window motor and the door speaker.

A DCM cannot be adjusted or repaired and, if damaged or ineffective, it must be replaced. The DCM software is flash programmable.

## **OPERATION**

The DCMs contain logic circuits that monitor various hardwired low current, multiplexed and Local Interface Network (LIN) data bus message external inputs from the power window, power lock, power mirror, power sliding door and memory switches on their respective doors. The front DCMs also monitor hardwired power window motor Hall effect sensors and memory mirror position sensor inputs. Other vehicle features that use the DCM include the Blind Spot Monitoring (BSM) system, interior lighting system for switch backlighting commands control and the Heating, Ventilation and Air Conditioning (HVAC) system to perform mirror defogging.

As mentioned, each DCM receives electronic message inputs from and shares its resources through electronic message outputs to other ECUs in the vehicle over the CAN-IHS data bus network. The program logic within the DCM allows the controller to prioritize all of these inputs and determine the tasks it needs to perform. These tasks are then completed either by controlling hardwired outputs to the various motor, actuators, lamps or displays contained on its own door or by sending electronic message requests over the CAN-IHS bus to the appropriate ECUs in the vehicle.

The DCMs are powered by a fused B(+) circuit and are grounded at all times so that they can operate regardless of the ignition position. The DCMs use On-Board Diagnostics (OBD) and communicate with a diagnostic scan tool using the CAN data bus.

The following are inputs to the DTCM:

- External Position Sensor (RPS) signal (2-Speed only)
- Ignition RUN sense.
- Front Axle Disconnect position feedback.
- Range Switch.
- Direct battery feed and DTCM ground.
- CAN-FD3 bus messages.

The following are outputs of the DTCM:

- Front Axle Disconnect - control & ground line.
- Range shift control.
- 5V sensor supply.
- Sensor ground.
- CAN-FD3 bus messages.

#### ***TRANSFER CASE RANGE SELECT SWITCH INPUT (4WD NEUTRAL, and 4WD LOW)***

With a two speed transfer case, the DTCM receives switch input from the vehicle CAN FD3 bus denoting the driver's selection to enter the 4WD-LOW or Neutral position. The one speed transfer case does not have range selection positions.

- The driver can press and hold the 4WD Low switch to enter Low Range operation and exit Low Range operation to get back to Hi-Range operation.
- The driver can press and hold the Neutral switch to shift the transfer case to Neutral Range and exit out of Neutral to Hi-Range operation.

The Transfer Case Switch Module (TCSM) is responsible for notifying the Body Control Module (BCM) of switched operation over the Local Interface Network (LIN) bus. The BCM communicates the switch position to the DTCM via the CAN-Interior High Speed (CAN-IHS) bus.

### **DTCM MODES OF OPERATION**

#### ***NORMAL OPERATION***

This mode is achieved when the ignition is in the RUN position. The DTCM powers up the FAD and 5V regulator circuit on the two speed transfer case. This mode also includes any required power-up system checks.

#### ***SHUT DOWN MODE***

This mode is activated when the ignition is turned to the OFF position. The DTCM will perform any required shut down tasks prior to turning off the 5V regulator.

#### ***LIMP-IN MODE***

The Electric Power Steering (EPS) module is mounted to the EPS rack and pinion steering gear. It is not serviced separately from the steering gear and they both must be replaced as an assembly.

The EPS module contains two microcontrollers operating independently in order to provide full actuation redundancy. The Electric Power Steering (EPS) system provides direction control of the vehicle via interfaces between the steering wheel of the vehicle and the steering knuckle of the front wheels. The system also provides varying assist to the driver according to driver inputs and vehicle speed while performing system diagnostic tests and providing this information to the vehicle electrical system.

Turning of the steering wheel is converted to linear (side-to-side) travel through the meshing of the helical pinion teeth with the rack teeth within the steering gear. The lateral travel pushes and pulls the tie rods to change the direction of the front wheels. Power assist steering is provided by an electric motor connected to the steering gear. The EPS system provides variable assist for steering maneuvers based on several inputs, including vehicle speed, Steering Angle Sensor (SAS), and vehicle voltage. The EPS system communicates over the Controller Area Network – Flex Data (CAN-FD) bus. The SAS is internal to the EPS rack and pinion and outputs the SAS angle to other modules via the CAN-FD bus.

Manual steering control of the vehicle can be maintained if power steering assist is lost. However, under this condition, steering effort is significantly increased.

For additional information about the steering system ([Refer to 19 - Steering/Description and Operation](#)).

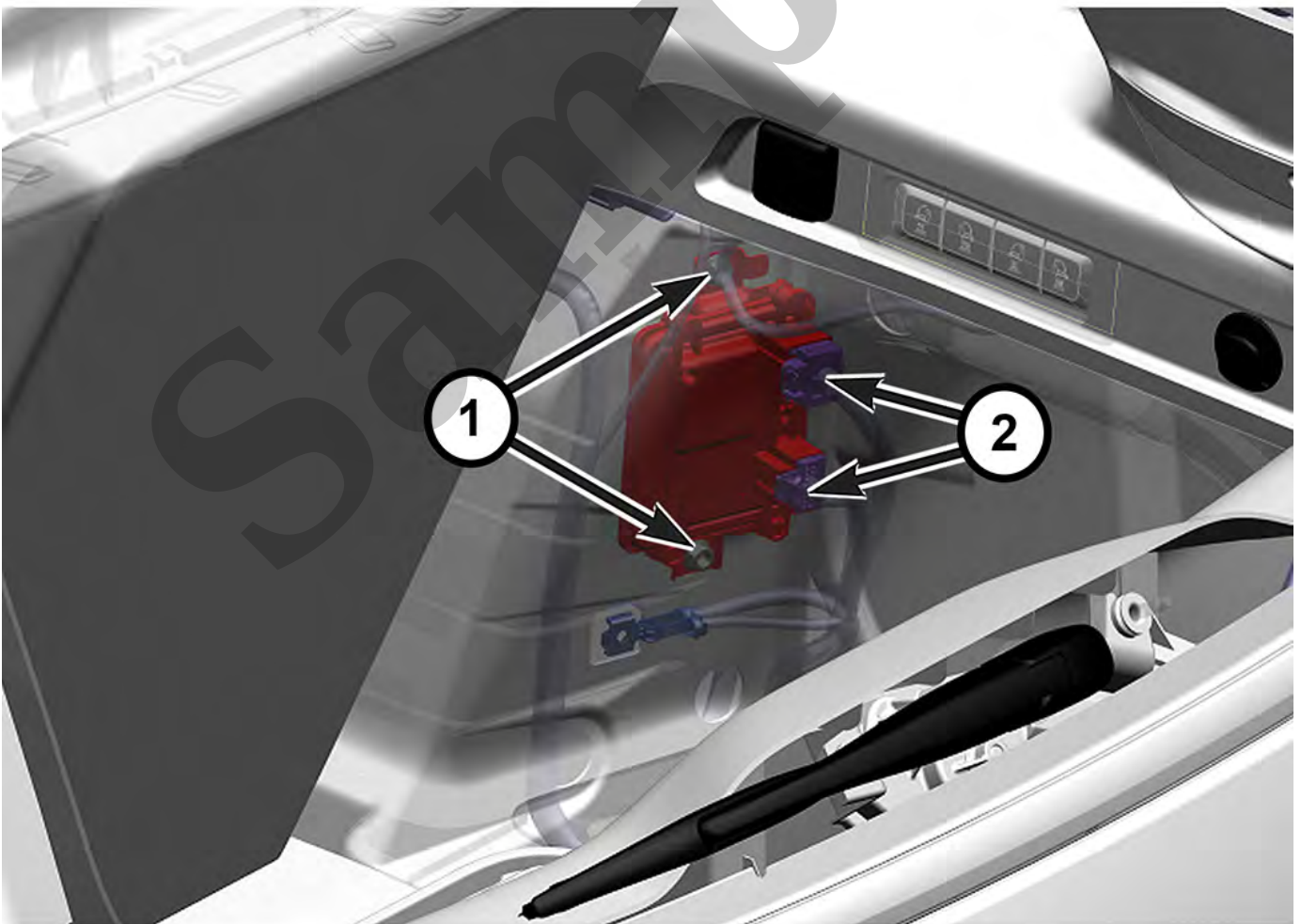
YOUR CURRENT VEHICLE

## Electronic Limited Slip Differential (ELSD) Module - Three Row Seats

### ELECTRONIC LIMITED SLIP DIFFERENTIAL (ELSD) MODULE - THREE ROW SEATS

#### REMOVAL

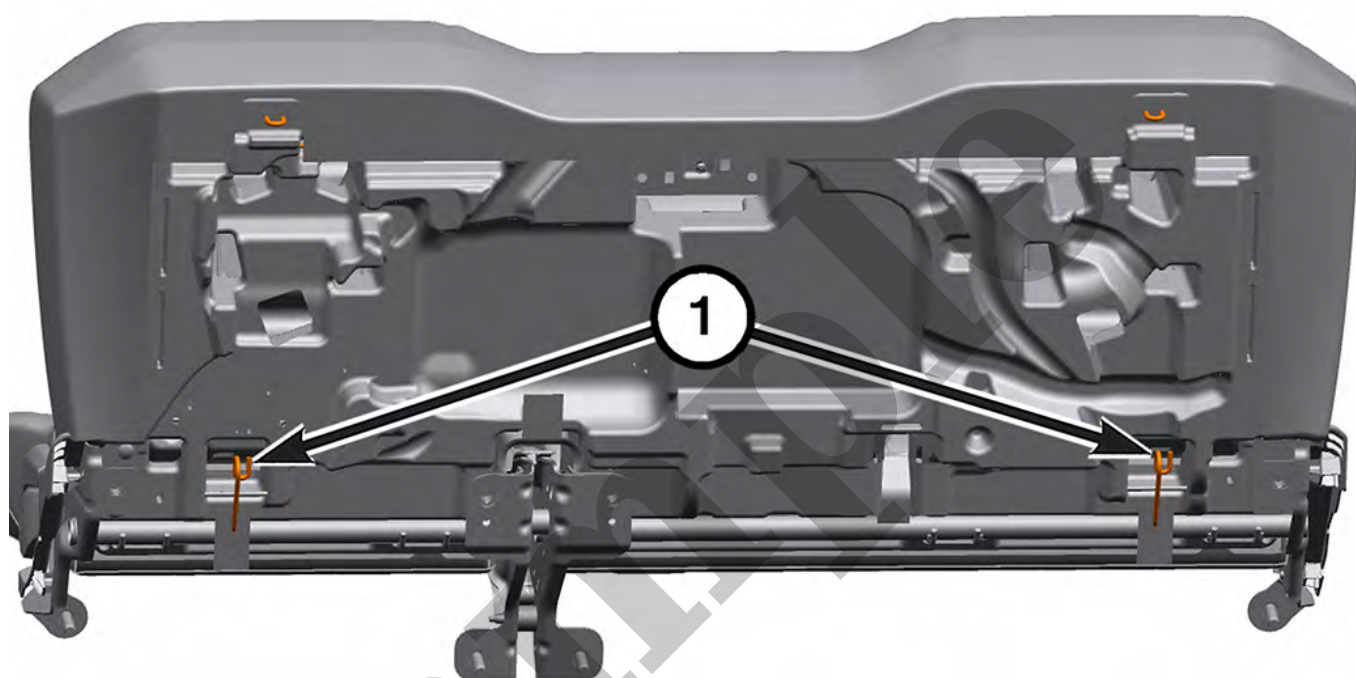
1. Remove the right rear quarter trim panel assembly ([Refer to Body/Interior/PANEL, Quarter Trim, Rear/Removal and Installation](#)).



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1 - Seat Cushion Latch

2. Underneath the front of the seat cushion, release the two seat cushion latches.

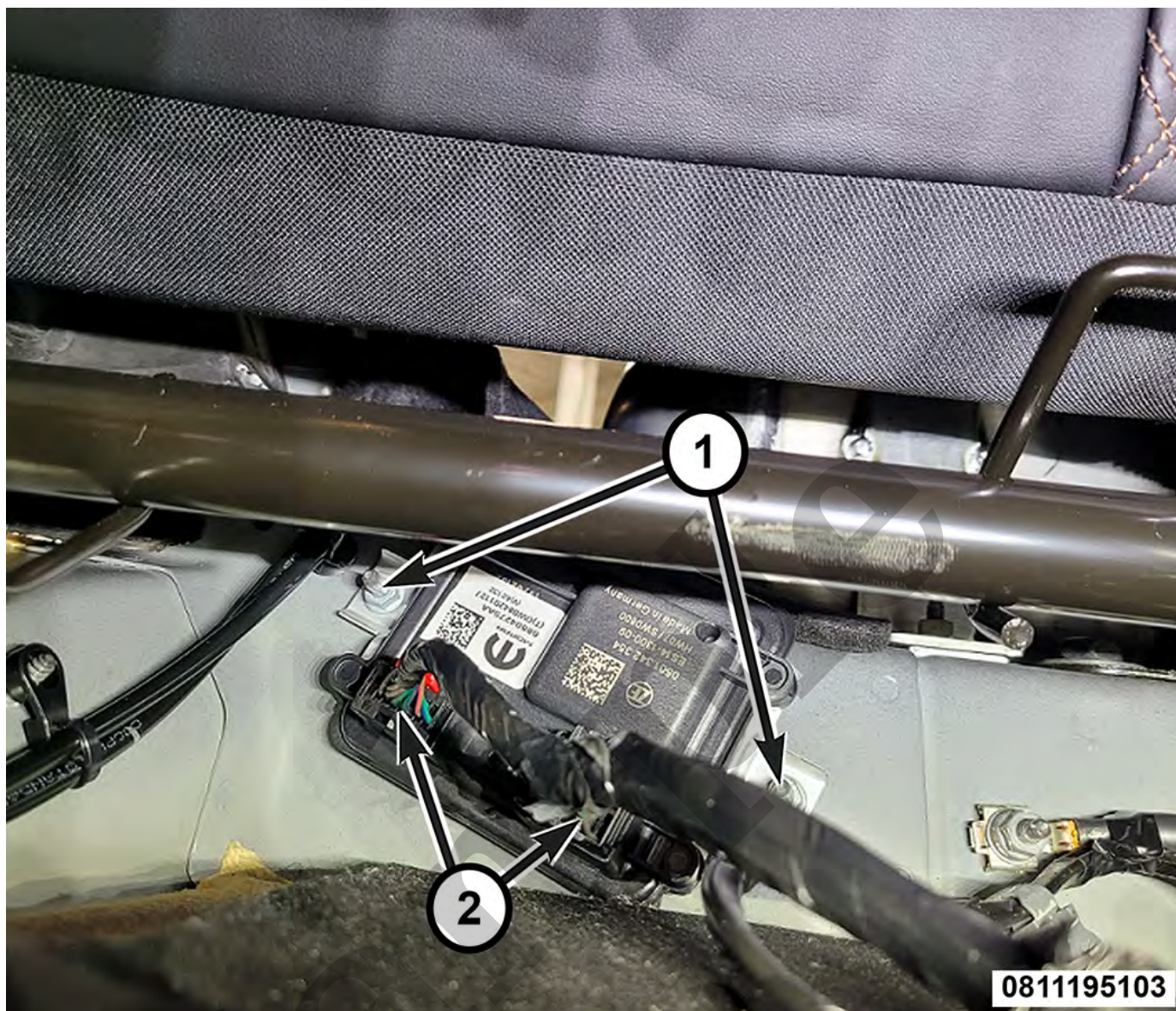


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1 - Rearward Cushion Hooks

3. Push the cushion toward the rear of the vehicle and lift up from the rear of the cushion to release the cushion from the rearward cushion hooks.
4. Remove the second row outboard left short wheelbase buckle and feed the seat belt webbing through the seat cushion opening ([Refer to Restraints/BUCKLE, Seat Belt/Removal and Installation](#)).





1 - ELSD Module Nuts

2 - ELSD Module Wire Harness Connectors

8. Disconnect the ELSD module wire harness connectors.
9. Remove the Electronic Limited Slip Differential (ELSD) Module Nuts.
10. Remove the ELSD module from the vehicle.

## INSTALLATION

Follow the removal procedure in reverse for general reassembly of the components on the vehicle. The steps listed below are calling out specific procedures that should be followed during installation.

- Perform the Electronic Limited Slip Differential Module Verification Test ([Refer to DTC-Based Diagnostics/MODULE, Electronic Limited Slip Differential \(ELSD\)/Standard Procedure](#)).

The ESM communicates with Electronic Control Units (ECUs) on the Controller Area Network – Flexible Data 3 (CAN-FD3) bus.

The ESM is connected to the vehicle wire harness with a single 10-terminal connector located on the bottom of the shifter.

The ESM can set Diagnostic Trouble Codes (DTCs) when a fault is detected.

Sample